

PCT

特許性に関する国際予備報告（特許協力条約第二章）

（法第12条、法施行規則第56条）

〔PCT36条及びPCT規則70〕

出願人又は代理人 の書類記号 10686-SH-PCT	今後の手続きについては、様式PCT/IPEA/416を参照すること。	
国際出願番号 PCT/JP03/12814	国際出願日 (日.月.年) 07.10.2003	優先日 (日.月.年) 09.10.2002
国際特許分類 (IPC) Int. Cl. 7 B41J2/175		
出願人 (氏名又は名称) シャープ株式会社		

- この報告書は、PCT35条に基づきこの国際予備審査機関で作成された国際予備審査報告である。
法施行規則第57条（PCT36条）の規定に従い送付する。
- この国際予備審査報告は、この表紙を含めて全部で 3 ページからなる。
- この報告には次の附属物件も添付されている。
 - ☒ 附属書類は全部で 6 ページである。
 - ☒ 補正されて、この報告の基礎とされた及び／又はこの国際予備審査機関が認めた訂正を含む明細書、請求の範囲及び／又は図面の用紙（PCT規則70.16及び実施細則第607号参照）
 - ☐ 第I欄4.及び補充欄に示したように、出願時における国際出願の開示の範囲を超えた補正を含むものとこの国際予備審査機関が認定した差替え用紙
 - ☐ 電子媒体は全部で _____（電子媒体の種類、数を示す）。
配列表に関する補充欄に示すように、コンピュータ読み取り可能な形式による配列表又は配列表に関連するテーブルを含む。（実施細則第802号参照）

- この国際予備審査報告は、次の内容を含む。
 - ☒ 第I欄 国際予備審査報告の基礎
 - ☐ 第II欄 優先権
 - ☐ 第III欄 新規性、進歩性又は産業上の利用可能性についての国際予備審査報告の不作成
 - ☐ 第IV欄 発明の単一性の欠如
 - ☒ 第V欄 PCT35条(2)に規定する新規性、進歩性又は産業上の利用可能性についての見解、それを裏付けるための文献及び説明
 - ☐ 第VI欄 ある種の引用文献
 - ☐ 第VII欄 国際出願の不備
 - ☐ 第VIII欄 国際出願に対する意見

国際予備審査の請求書を受理した日 20.01.2004	国際予備審査報告を作成した日 26.07.2004	
名称及びあて先 日本国特許庁 (IPEA/JP) 郵便番号100-8915 東京都千代田区霞が関三丁目4番3号	特許庁審査官（権限のある職員） 名取 乾治	2P 9211
電話番号 03-3581-1101 内線 3261		

第I欄 報告の基礎

1. この国際予備審査報告は、下記に示す場合を除くほか、国際出願の言語を基礎とした。

☐ この報告は、_____語による翻訳文を基礎とした。

それは、次の目的で提出された翻訳文の言語である。

- ☐ PCT規則12.3及び23.1(b)にいう国際調査
☐ PCT規則12.4にいう国際公開
☐ PCT規則55.2又は55.3にいう国際予備審査

2. この報告は下記の出願書類を基礎とした。(法第6条(PCT14条)の規定に基づく命令に応答するために提出された差替え用紙は、この報告において「出願時」とし、この報告に添付していない。)

☐ 出願時の国際出願書類

☒ 明細書

第 1, 4-6, 9, 10, 12, 13	ページ、	出願時に提出されたもの	
第 2, 7	ページ*	16. 04. 2004	付けで国際予備審査機関が受理したもの
第 3, 8, 11	ページ*	16. 07. 2004	付けで国際予備審査機関が受理したもの

☒ 請求の範囲

第 2, 3, 5-8	項、	出願時に提出されたもの	
第 _____	項*	PCT19条の規定に基づき補正されたもの	
第 1	項*	16. 04. 2004	付けで国際予備審査機関が受理したもの
第 4	項*	16. 07. 2004	付けで国際予備審査機関が受理したもの

☒ 図面

第 1-10	ページ /図、	出願時に提出されたもの	
第 _____	ページ/図*		付けで国際予備審査機関が受理したもの
第 _____	ページ/図*		付けで国際予備審査機関が受理したもの

☐ 配列表又は関連するテーブル

配列表に関する補充欄を参照すること。

3. ☐ 補正により、下記の書類が削除された。

<input type="checkbox"/> 明細書	第 _____	ページ
<input type="checkbox"/> 請求の範囲	第 _____	項
<input type="checkbox"/> 図面	第 _____	ページ/図
<input type="checkbox"/> 配列表(具体的に記載すること)	_____	
<input type="checkbox"/> 配列表に関連するテーブル(具体的に記載すること)	_____	

4. ☐ この報告は、補充欄に示したように、この報告に添付されかつ以下に示した補正が出願時における開示の範囲を超えてされたものと認められるので、その補正がされなかったものとして作成した。(PCT規則70.2(c))

<input type="checkbox"/> 明細書	第 _____	ページ
<input type="checkbox"/> 請求の範囲	第 _____	項
<input type="checkbox"/> 図面	第 _____	ページ/図
<input type="checkbox"/> 配列表(具体的に記載すること)	_____	
<input type="checkbox"/> 配列表に関連するテーブル(具体的に記載すること)	_____	

* 4. に該当する場合、その用紙に“superseded”と記入されることがある。

第V欄 新規性、進歩性又は産業上の利用可能性についての法第12条（PCT35条(2)）に定める見解、それを裏付ける文献及び説明

1. 見解

新規性 (N)	請求の範囲	1 - 8	有 無
	請求の範囲		
進歩性 (I S)	請求の範囲	1 - 8	有 無
	請求の範囲		
産業上の利用可能性 (I A)	請求の範囲	1 - 8	有 無
	請求の範囲		

2. 文献及び説明 (PCT規則70.7)

・ 請求の範囲 1 - 8 について

文献 1. JP 2001-096764 A(セイコーエプソン株式会社)2001.04.10
第1頁、【0006】 - 【0010】、【0030】 - 【0033】、【0038】、全図面

文献 2. JP 2002-254670 A(セイコーエプソン株式会社)2002.09.11
【0007】、【0024】、【0030】、全図面

上記文献 1、2 は、当該技術分野における一般的技術水準を示す文献であって、キャリッジに上下方向に開閉自在に取り付けられて、インクカートリッジの上面を底面に向けて押圧保持する上カバーが開示されているが、キャリッジの水平方向に開閉自在に取り付けられて、インクカートリッジの前面を後面側に向けて押圧保持し、かつ、インクカートリッジの第2の側面を第1の側面側に向けて押圧保持する前カバーに関しては記載も示唆もされていない。

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JC13 Rec'd PCT/PTO 07 APR 2005

mounting and dismounting of ink cartridge, as well as simplified assembly and adjustment operations of components.

DISCLOSURE OF THE INVENETION

(1) A support structure for ink cartridge of the invention which is provided detachably in an ink jet printing apparatus includes:

a carriage for reciprocating in a main scanning direction, the carriage having a rear wall for supporting a rear surface of an ink cartridge, a base for supporting a bottom surface of the ink cartridge, and a first lateral wall for supporting a first lateral surface of the ink cartridge;

a front cover connected to the carriage openably and closably in a horizontal direction, the front cover pressing a front surface of the ink cartridge toward the rear surface and pressing a second lateral surface of the ink cartridge toward the first lateral surface thereof; and

an upper cover connected to the carriage openably and closably in a vertical direction, the upper cover pressing a top surface of the ink cartridge toward the bottom surface.

The configuration allows the ink cartridge to be mounted or dismounted smoothly, because there is no obstacle at the front and top of the ink cartridge when the front cover is pivoted in the horizontal direction to be opened and the upper cover is pivoted upwards to be opened.

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Also, the carriage presses the ink cartridge as mounted from front to rear, from top to bottom, and from side to side. The carriage thus supports the cartridge firmly while traveling, thereby ensuring electric continuity between the carriage and the ink cartridge and thus a constant high-quality level of printing.

(2) The front cover has a front pressure member for pressing the front surface of the ink cartridge toward the rear surface thereof.

The front pressure member provided in the front cover is configured to press the front surface of the ink cartridge toward the rear surface thereof by an elastic force exerted by an elastic member such as a plate spring. This configuration ensures that the ink cartridge is pressed firmly.

(3) The front cover has a lateral pressure member for pressing the second lateral surface of the ink cartridge toward the first lateral surface thereof.

The lateral pressure member provided in the front cover is configured to press the second lateral surface of the ink cartridge toward the first lateral surface thereof by an elastic force exerted by an elastic member such as a plate spring. This configuration ensures that the ink cartridge is pressed firmly.

(4) The front cover has an upper pressure member for pressing the top surface of the ink cartridge toward the bottom surface thereof.

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As shown in FIGs. 2 to 5, the carriage 2 has a rear wall 2a, a first lateral wall 2b, and a base 2c. A front cover 5 for holding the ink cartridge 1 is connected pivotably to the carriage 2 through a spindle 5a and a front cover release spring 5b. Provided at an inner part of the front cover 5 is a front pressure member 6 made of an elastic member such as a piece of rubber or a plate spring. The front pressure member 6 presses a front surface of the ink cartridge 1, so that a rear surface thereof is pressed firmly against the rear wall 2a.

An upper cover 7 is attached to the carriage 2 through a spindle 7a and an upper cover release spring 7b so as to be pivotable, i.e., openable and closeable in a vertical direction. The upper cover 7 presses a top surface of the ink cartridge 1 toward a bottom surface thereof. A detecting rib (detecting member) 7d integrated with the upper cover 7 is provided for detecting whether a proper ink cartridge is mounted on the carriage 2. Provided at a top part of the front cover 5 is an upper pressure member 8 made of an elastic member such as a piece of rubber or a plate spring.

Provided at an inner part of the front cover 5 is a lateral pressure member 9 made of an elastic member such as a piece of rubber or a plate spring. With the ink cartridge 1 mounted on the carriage 2, the lateral pressure member 9 presses a left lateral surface of the ink cartridge 1, so that a right lateral surface thereof is

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pressed firmly against the first lateral wall 2b. A lock lever 10 is pivotably attached to a corner part of an open end of the front cover 5. When the ink cartridge 1 is to be replaced, the lock lever 10 is unlatched from, and latched again to, a front-end part of the first lateral wall 2b.

As viewed from above, the front cover 5 is formed in the shape of the letter L, as in FIG. 2. The cover 5 includes a base having a not-shown connecting portion. The cover 5 is connected pivotably, i.e., openably and closably in a horizontal direction, at the base to the carriage 2 through the spindle 5a and the front cover release spring 5b. A solid line in FIG. 2 depicts an open state of the cover 5, and a solid line in FIG. 3 depicts a closed state of the cover 5.

The front pressure member 6 provided at the inner part of the front cover 5 is elastically biased by the elastic member such as a plate spring. With the ink cartridge 1 mounted, the front pressure member 6 presses the front surface of the ink cartridge 1, so that the rear surface thereof is pressed firmly against the rear wall 2a. The front pressure member 6 is attached pivotably at a top part thereof to the front cover 5 through the spindle 6a. A lower portion of the member 6 is elastically biased towards the rear wall 2a by a plate spring 6b.

The upper cover 7 has a base which includes a not-shown connecting portion. The cover 7 is connected

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pivotably, i.e., openably and closably in a vertical direction, at the base to the carriage 2 through an upper cover engaging cam 7c provided in the spindle 7a. With the ink cartridge 1 mounted, the upper pressure member 8 provided at the top part of the front cover 5 presses the top surface of the ink cartridge 1 toward the bottom surface thereof. The bottom surface is thus stably situated on the base 2c. In FIG. 4, a solid line and a double-dotted dashed line depict a closed state and an open state, respectively; of the upper cover 7.

With the ink cartridge 1 mounted, the lateral pressure member 9 provided at the inner part of the front cover 5 presses the left lateral surface of the ink cartridge 1, so that the right lateral surface thereof is pressed firmly against the first lateral wall 2b.

Thus, the carriage 2 supports firmly the ink cartridge 1 as mounted by pressing the cartridge 1 from front to rear, from top to bottom, and from side to side. This serves to avoid jounce of the ink cartridge 1 during scanning movement of the carriage 2, thereby ensuring electric continuity between the carriage 2 and the ink cartridge 1 and thus a constant high-quality level of printing.

When the ink cartridge 1 is to be replaced, the lock lever 10 is operated to open the front cover 5. The operation of the lock lever 10 automatically causes a not-shown torsion spring to act to open the front cover 5. Then, the upper cover 7 is opened automatically, as shown

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Also, the front pressure member 6, the lateral pressure member 9, and the upper pressure member 8, which are provided in the front cover 5, may be omitted. In the case, a projecting portion for pressing the surface of the ink cartridge 1 should be formed in each of the front inner side and lateral inner side of the front cover 5 and in the inner side of the upper cover 7. It is preferable that the projecting portions have appropriate elasticity.

As is clear from the foregoing, the present invention has the following advantageous features.

(1) The carriage supports the rear surface, bottom surface, and first side surface of the ink cartridge. Also, the front cover presses the front surface of the ink cartridge toward the rear surface thereof and presses the second side surface of the cartridge toward the first side surface thereof. Further, the upper cover presses the top surface of the cartridge toward the bottom surface thereof. The carriage thus holds the ink cartridge firmly by pressing the cartridge from front to rear, top to bottom, and side to side. Accordingly, the carriage supports the ink cartridge stably while reciprocating in the main scanning direction, thereby ensuring electric continuity between the carriage and the ink cartridge and thus high print quality.

When the ink cartridge is to be dismounted, the front cover is pivoted in the horizontal direction to be opened,

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CLAIMS

(1) (Amended) A support structure for ink cartridge provided detachably in an ink jet printing apparatus, comprising:

a carriage for reciprocating in a main scanning direction, the carriage including a rear wall for supporting a rear surface of an ink cartridge, a base for supporting a bottom surface of the ink cartridge, and a first lateral wall for supporting a first lateral surface of the ink cartridge;

a front cover connected to the carriage openably and closably in a horizontal direction, the front cover pressing a front surface of the ink cartridge toward the rear surface and pressing a second lateral surface of the ink cartridge toward the first lateral surface thereof; and

an upper cover connected to the carriage openably and closably in a vertical direction, the upper cover pressing a top surface of the ink cartridge toward the bottom surface.

(2) A support structure for ink cartridge according to claim 1, wherein the front cover has a front pressure member for pressing the front surface of the ink cartridge toward the rear surface thereof.

(3) A support structure for ink cartridge according to claim 1, wherein the front cover has a lateral pressure member for pressing the second lateral surface of the ink cartridge toward the first lateral surface thereof.

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(4) (Amended) A support structure for ink cartridge according to claim 1, wherein the front cover has an upper pressure member for pressing the top surface of the ink cartridge toward the bottom surface thereof.

(5) A support structure for ink cartridge according to claim 1, wherein the front cover and the upper cover are connected to move in conjunction with each other, so that open and close operation of either one of the front cover and the upper cover involves open and close operation of the other one.

(6) A support structure for ink cartridge according to claim 5, wherein the front cover and the upper cover are connected to move in conjunction with each other through a bevel-gear mechanism.

(7) A support structure for ink cartridge according to claim 5, wherein the front cover and the upper cover are connected to move in conjunction with each other through a cam mechanism.

(8) A support structure for ink cartridge according to claim 1, wherein the upper cover includes a detecting member for detecting whether an ink cartridge as mounted is a proper one.

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